Space Weather Forecast

Issued on Thursday 12 December 2024 at 01:02 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Low to Moderate Solar Activity

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate with three Moderate class flares observed. The peak flare was from a recently departed region over the southwestern limb. There are currently four active regions on the disc, with a region in the northeast now the largest after showing development in the last 24-48 hours and is the most magnetically complex. A region in the southeast of the disc, gave several Moderate class flares as it rotated around the southeast limb. However, this remains a small and relatively simple region in recent imagery, although it is proving difficult to analyse in its current location. The other region of note which is now moving across into the southwest disc, has shown some consolidation of its smaller spots into a few larger ones.

No Earth directed coronal mass ejection (CME's) were observed although a number have been analysed as missing.

Solar Wind / Geomagnetic Activity: Slow solar wind with speeds around 360-380km/s. The Interplanetary Magnetic Field was weak, with the north-south component (Bz) often fluctuating but becoming mainly southwards. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background, with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely with isolated Moderate class flares and a very slight chance of Strong class flares.

Solar Wind / Geomagnetic Activity: There are no Earth directed CMEs. Mainly background winds are expected. The next main enhancement to the solar wind is likely to be on Day 3 (14 Dec) and into Day 4 (15 Dec) from the onset of the fast winds from a coronal hole. Geomagnetic activity is forecast to be Quiet with a chance of isolated Unsettled intervals. This increasing to give Unsettled to Active, with a slight chance of G1 Minor Storm intervals on Days 3-4 (14-15 Dec) if any enhancement occurs.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background, with only a very slight chance of solar radiation storms

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occurring.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	60	60	65	65
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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